



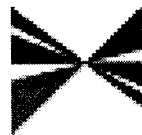
THE TIOGA GROUP



INLAND PORT FEASIBILITY STUDY

**Update Presentation to the
Goods Movement Task Force
January 17, 2007**

**The Tioga Group, Inc.
Railroad Industries, Inc.
Meyer, Mohaddes Associates**

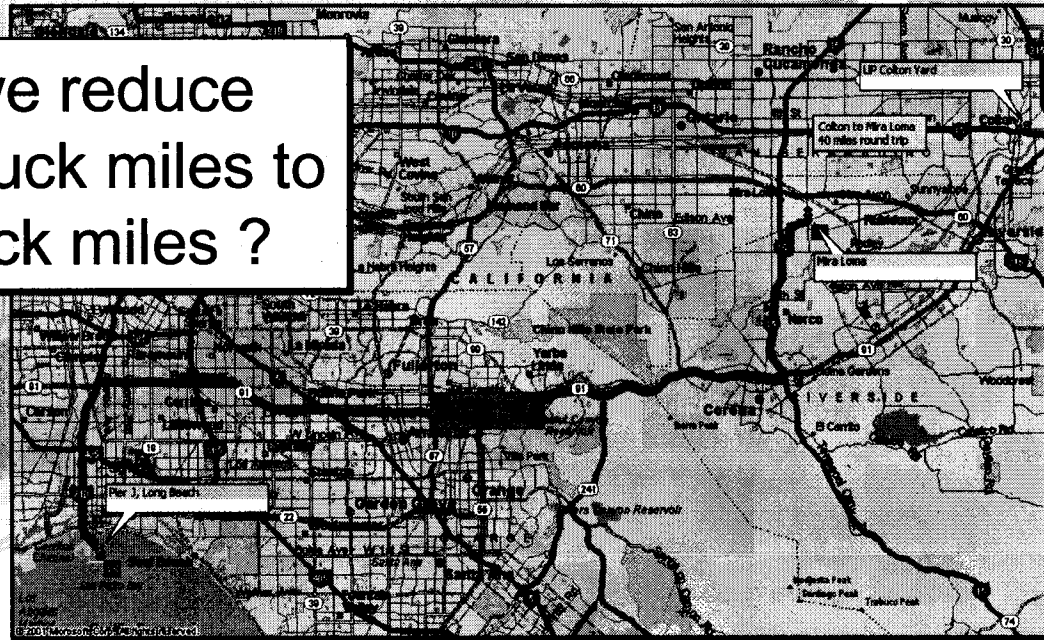


**SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS**

Project Objectives

- Determine the purpose and benefits of an Inland Port and the various functions it might include
- Identify the potential utility of an Inland Port to users and stakeholders in the goods movement system
- Identify the potential freight traffic congestion relief

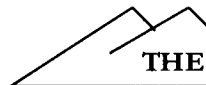
Can we reduce
116 truck miles to
40 truck miles ?



Port Truck Survey Results: 2010 Truck Flows

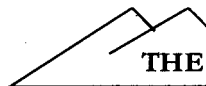
- The underlying Inland Empire market appears to be large enough for rail service.
- Bobtail tractors will not move on the rail shuttle, but some of their activity will be transferred to the inland locations
- Bare chassis movements will require additional study to determine which, if any, would be candidates for a rail shuttle

2010 Truck Flows	Daily			Annual		
	San Bernardino	Riverside	Total	San Bernardino	Riverside	Total
Port to Region						
Import Loads	768	188	956	213,965	52,377	266,342
Empties, Chassis, Bobtails	885	216	1,101	246,561	60,178	306,739
Subtotal	1,653	404	2,057	460,526	112,554	573,080
Region to Port						
Export Loads	310	87	397	86,366	24,238	110,604
Empties, Chassis, Bobtails	1,591	448	2,039	443,253	124,813	568,065
Subtotal	1,901	535	2,436	529,619	149,051	678,670
Total						
Loads	1,078	275	1,353	300,331	76,615	376,946
Empties, Chassis, Bobtails	2,476	664	3,140	689,814	184,990	874,804
Grand Total	3,554	939	4,493	990,144	261,605	1,251,750

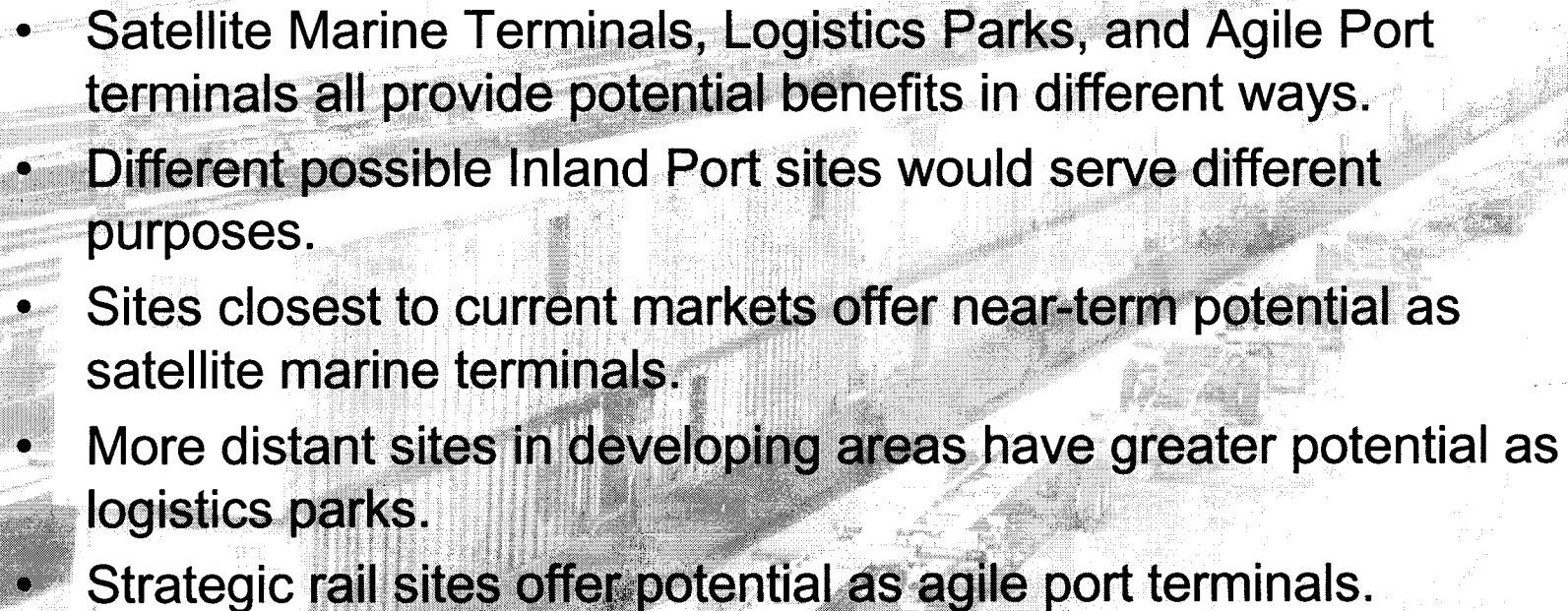


Major Issues Facing an Inland Port

- **Matching inland port strategy with potential locations.**
- **Site/VMT tradeoffs.**
- **Alternatives for Inland Empire sites.**
- **Rail capacity constraints.**

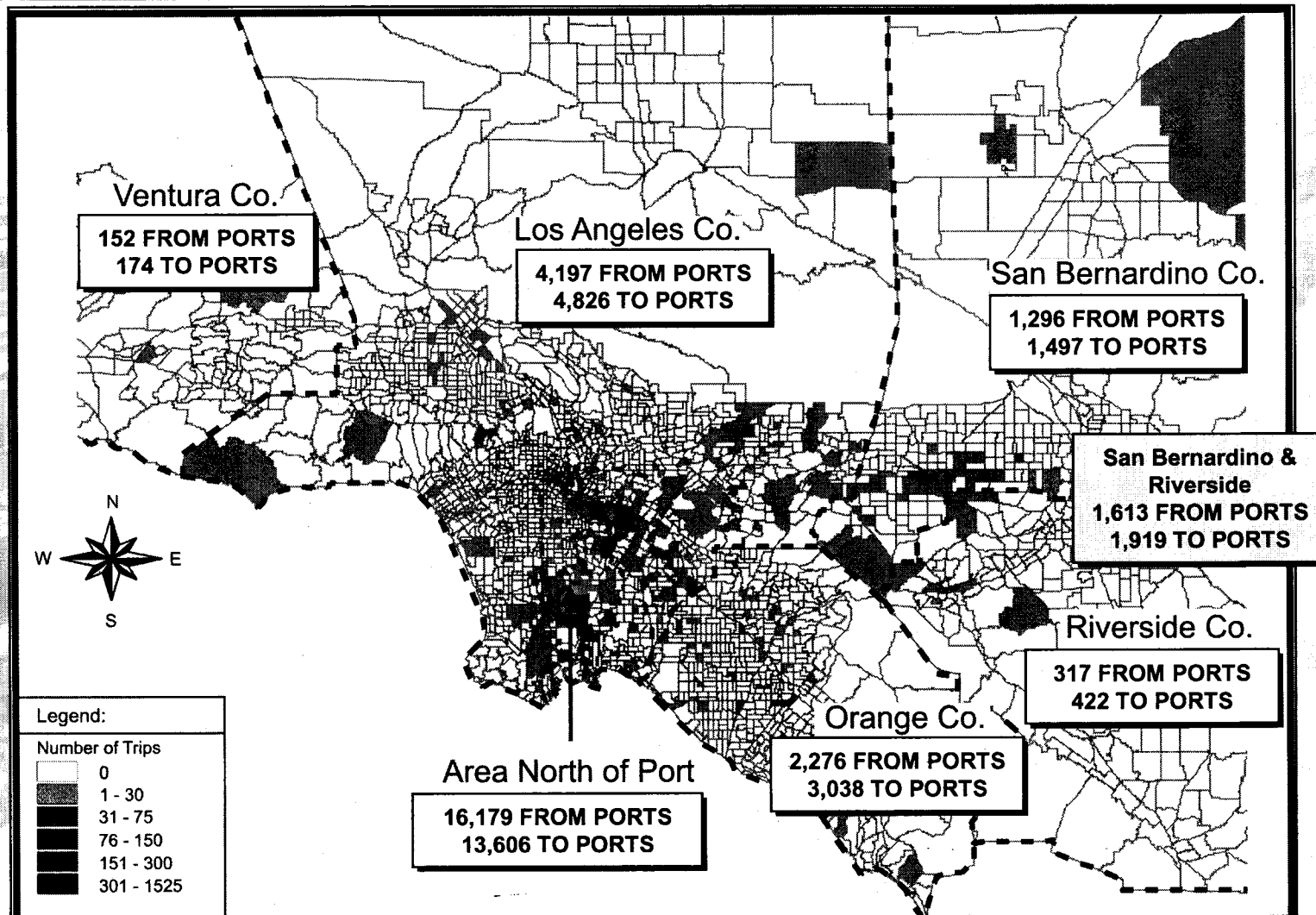


Matching inland port strategy with locations

- 
- Satellite Marine Terminals, Logistics Parks, and Agile Port terminals all provide potential benefits in different ways.
 - Different possible Inland Port sites would serve different purposes.
 - Sites closest to current markets offer near-term potential as satellite marine terminals.
 - More distant sites in developing areas have greater potential as logistics parks.
 - Strategic rail sites offer potential as agile port terminals.

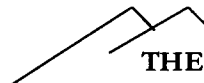
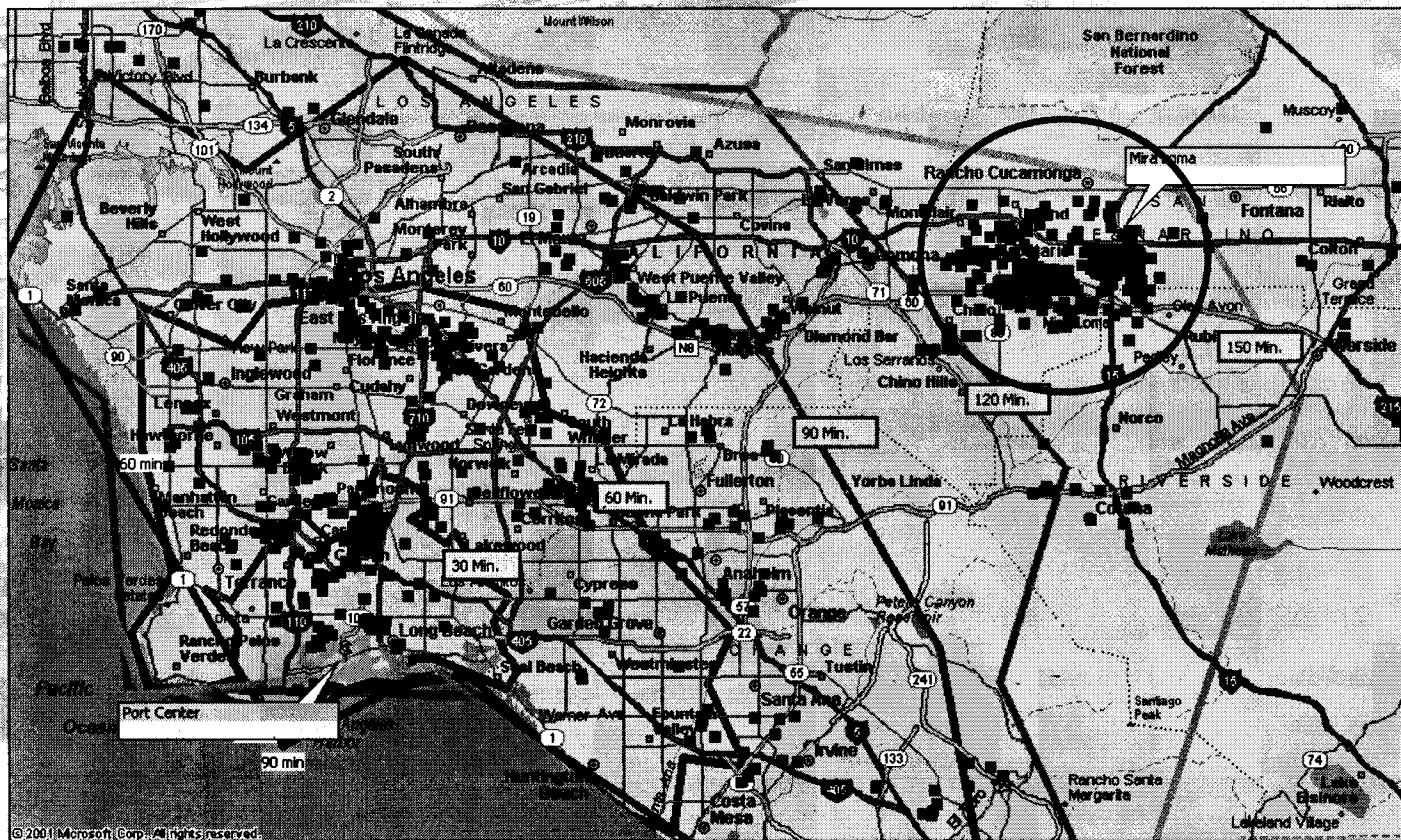


Current Markets: Daily 2005 Trips



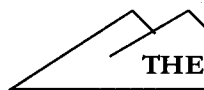
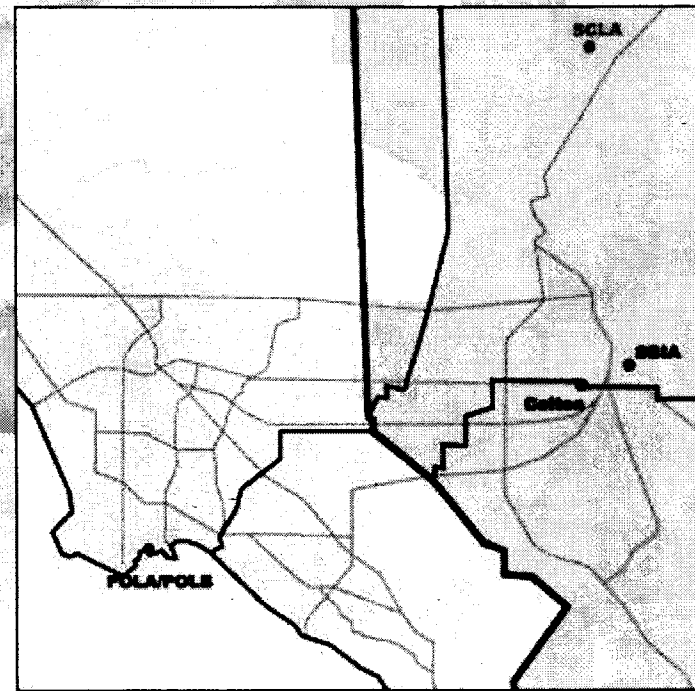
Potential Market Access: Mira Loma

- The Mira Loma concentration of distribution centers and other customers is a key target market.



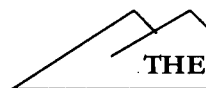
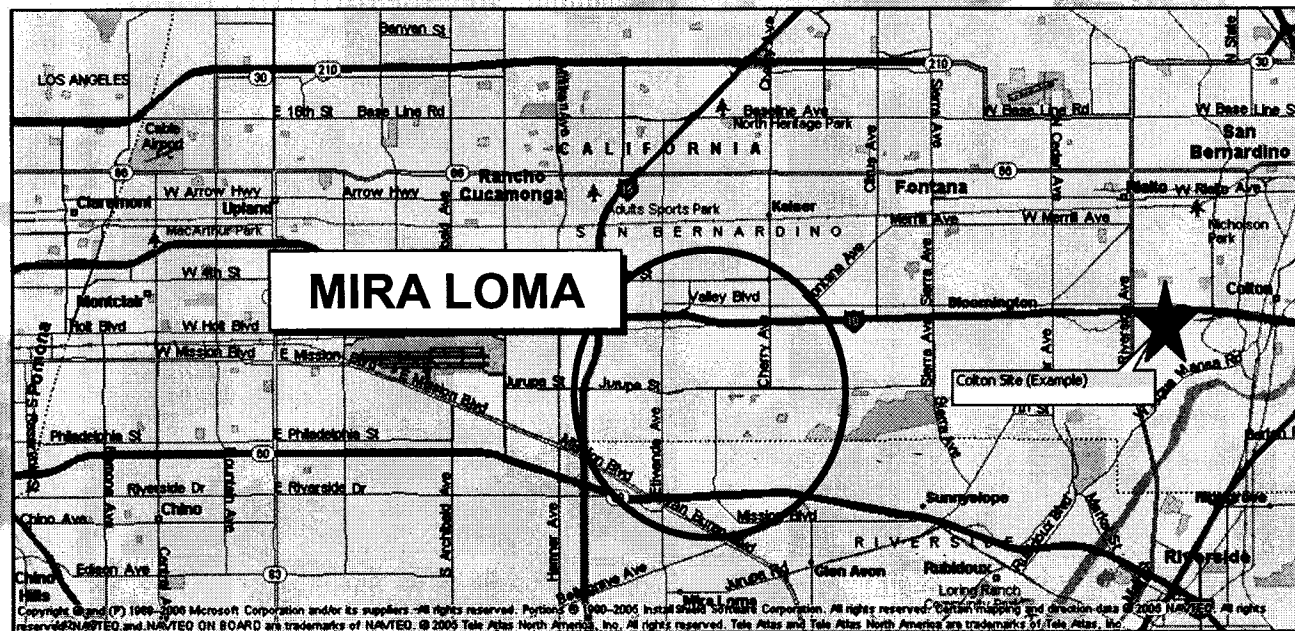
Methodology

- The Inland Port service area for this analysis is defined as Riverside and San Bernardino Counties as well as Los Angeles County East of SR-71.
- The scenarios were generated for AM, midday, and PM peak hours for the years 2005 and 2010 for the following options:
 - **No inland port**
 - **Colton Inland Port**
 - **SBIA Inland Port**
 - **SCLA Inland Port**



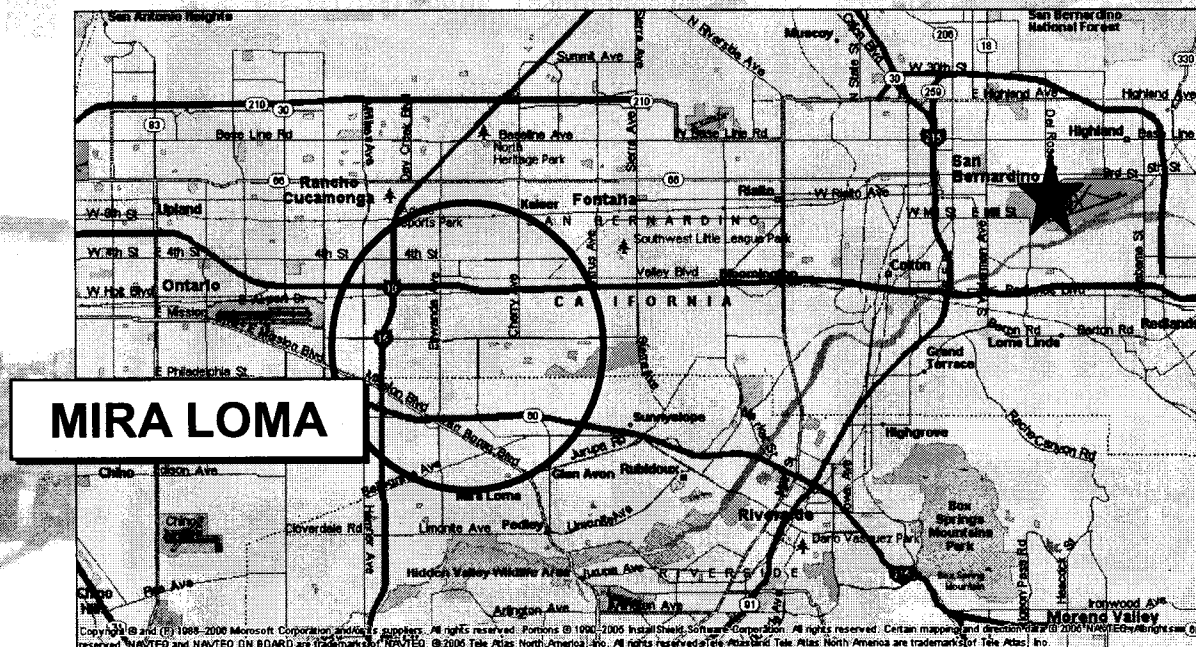
Colton Scenario

- The Colton Inland Port Facility has the highest reduction in port-related VMT. Proximity to Mira Loma is the major factor.
- A Colton Inland Port reduces 90,000 truck VMT per day in 2005 and 116,000 truck VMT per day in 2010. This is a reduction of 4.9% and 4.6% of the port-related truck VMT respectively.



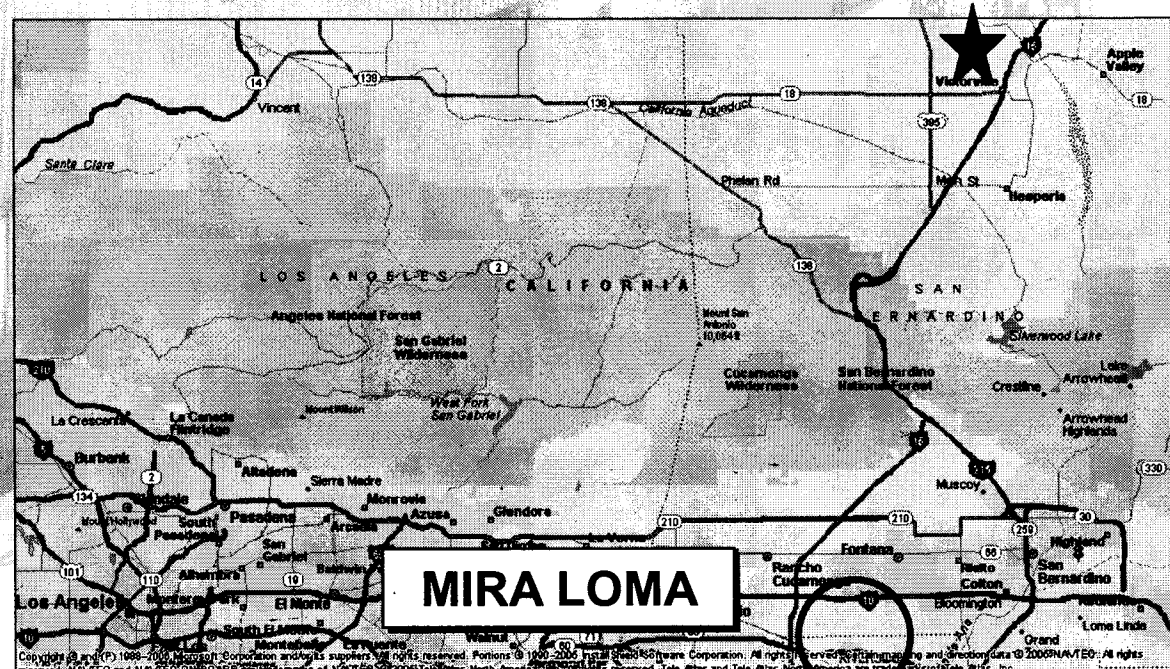
SBLA Scenario

- SBIA, because it is eight miles farther to the east of Mira Loma, has a lower VMT-reduction benefit than the Colton location.
- An SBIA Inland Port facility reduces 77,000 truck VMT per day in 2005, and 99,000 truck VMT per day in 2010. This is a reduction of 4.1% and 3.9% of the port-related truck VMT respectively.



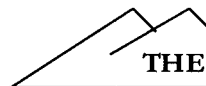
SCLA Scenario

- The SCLA location does not offer a great benefit for VMT or travel time for Inland Empire customers. SCLA is better positioned for future market development.
- An SCLA facility reduces 14,000 truck VMT per day in 2005, and 14,000 truck VMT per day in 2010. This is a reduction of 0.4% and 0.5% of the port-related truck VMT respectively.

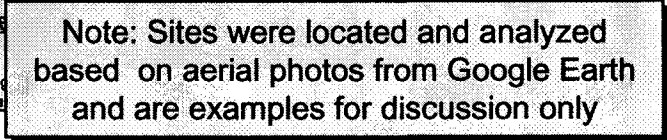


Alternatives for Inland Empire sites

- The lack of usable sites for a new Inland Empire intermodal terminal is a formidable barrier to development of a rail-served inland port.
- BNSF's San Bernardino terminal is full, with no room for a long-term rail shuttle operation.
- BNSF has searched for a new Inland Empire terminal site without success.
- UP does not have an Inland Empire intermodal terminal.
- Large intermodal terminals are unpopular with communities.



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Site 1, North of Ontario Airport

- Apparently 3 parcels of undeveloped or unused property with 35+ acres of useable property on UP main line
- This location would be a typical small rail intermodal facility with up to 100,000 units of capacity.
- Estimated Capacity: 5000' of loading track plus 1000 parking slots.



Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Site 3, Colton

- **Old, unused UP rail facility, approximately 25 acres north of the main. There is additional room to south. Direct access to I-10 is a tremendous advantage.**
- **This site could be either a low-cost 100,000 lift conventional terminal or a high cost, very high volume container terminal with tracks, storage, and travel lanes all under a wide span crane.**



Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Site 6, Quarry Property

- About 25 acres of quarry land accessed via BNSF and I-15/ SR 91 .
- This facility is representative of several quarry properties with rail access in the basin. Loading tracks would be 1000'-1200' on a perpendicular stub end configuration. There would be plenty of land for parking.



Site 7, BNSF Undeveloped Land

- Approximately 30 acres of undeveloped land accessed via BNSF and Center Street to I-215
- Undeveloped property is costly to develop into intermodal capacity.
- This facility would make a good container yard with lots of room for parking relative to the lift on lift off operation.

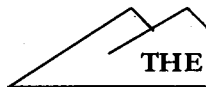


Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Alternative Site Implications

- There are candidate sites in the Inland Empire for one or more small intermodal terminals to support a rail shuttle.
- A special-purpose facility could be owned and operated by the railroad (with daily operations contracted out), or by a public or private third party.
- A special purpose terminal could minimize on-terminal dwell time and incorporate chassis pooling or off-site chassis storage to conserve space.
- Existing brownfield or rail sites could be used either as long-term or interim terminals.

Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only



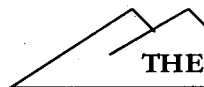
Rail capacity constraints

- **Rail capacity constraints are probably the most serious barrier to development of a rail shuttle.**
- **BNSF and UP are facing escalating capacity demands from both rail freight growth and public passenger service.**
- **Given limited capacity, the railroads will logically favor long-distance, high-revenue traffic – and that strategy is consistent with the public interest in efficiency.**
- **Railroads will not willingly participate in short-haul intermodal shuttles without significant capacity increases. Operating subsidies alone are not enough.**



Rail capacity options

- **California's current focus on transportation infrastructure provides opportunities to address rail capacity constraints.**
- **Taken together the infrastructure bonds and the State Goods Movement Action Plan signal a commitment to address critical shortfalls and a willingness to finance rail capacity for both public and private uses.**
- **To take advantage of the opportunity –**
 - **The public sector may need to negotiate complex but balanced packages of capital investment and service commitments.**
 - **Railroads may need to treat public capital dollars and operating subsidies as parts of a comprehensive revenue stream from public-interest operations.**



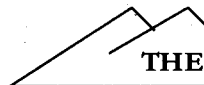
Task Structure and Approach

- ✓ Task 1: Define the concept and purpose of an Inland Port facility
- ✓ Task 2: Describe existing Inland Port concepts in the SCAG region
- Task 3: Interviews and surveys to determine feasibility and demand
- Task 4: Estimate the costs and benefits of the proposed Inland Port concepts
- Task 5: Final Report - Evaluate the feasibility of alternative Inland Port sites

Task 1 & 2 - Purpose & Concepts		Task 3 - Interviews, Stakeholders, Data Collection						Task 4 - Analysis												
Function	Purpose & Benefits	Operational Feasibility	Commercial & Economic Feasibility			Institutional Feasibility														
Inland Port			FY 05-06						FY 06-07											
Container Depot			January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June
Empty Reuse Staging																				
Air cargo consolidation																				
Marine/Domestic Transloading																				
Rail/Truck Transloading			Task 1 - Concept						*											
Foreign Trade Zone			Task 2 - Existing/Planned						*											
LCV Staging																				
Truck Parking			Task 3 - Concept			Task 3 - Feasibility						Task 3 - Feedback			*					
Agile Port Container Sort									Cost/Benefit Analysis						*					
Other _____																				
Other _____																				
			* Deliverables												*					

Inland Port Location/VMT Tradeoffs

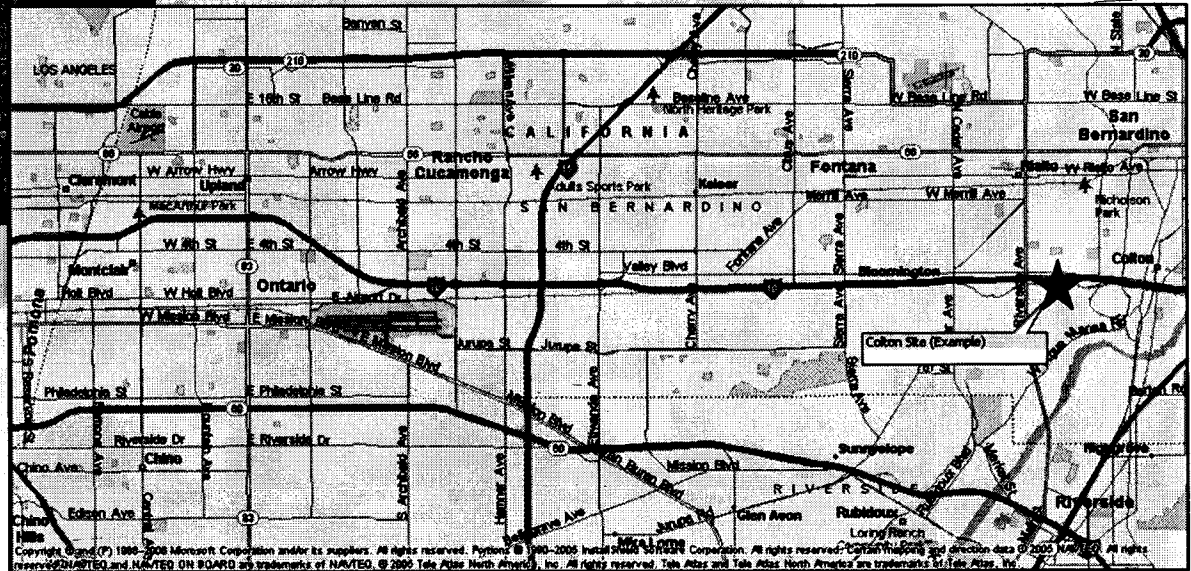
- **MMA developed preliminary estimates of the truck VMT reduced by the construction of an inland port facility.**
- **MMA used detailed port truck origin and destination data based on trucker surveys that we conducted at each port terminal in 2004.**
- **Three inland port facility locations were analyzed: Colton, San Bernardino International Airport (SBIA) and the Southern California Logistics Airport (SCLA).**
- **Scenarios were modeled for each of the potential port locations for the AM, midday, and PM peak hour in the years 2005 and 2010.**



Colton Site

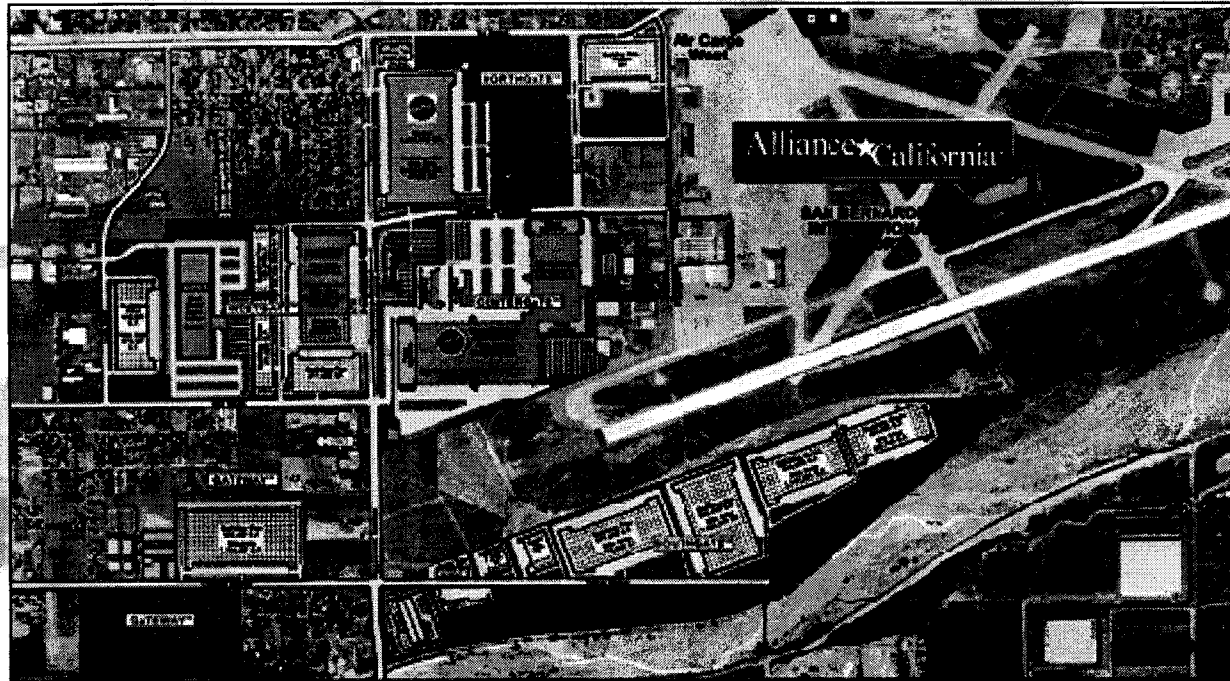


- The sample Colton site is adjacent to the Union Pacific yard complex.
- Colton is at the edge of the existing urban Inland Empire, and would be suitable as a satellite marine terminal.

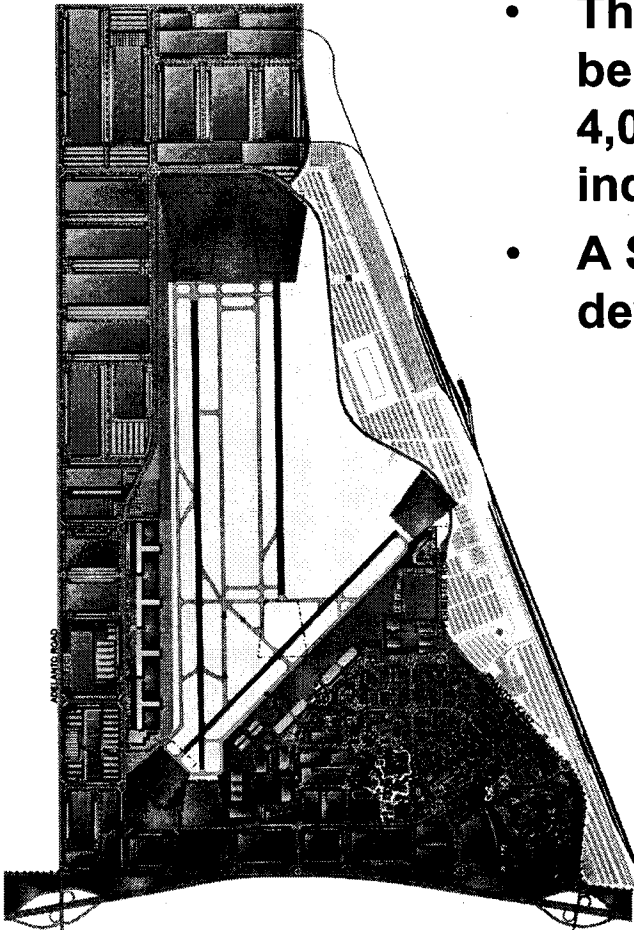


San Bernardino Intl Airport

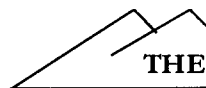
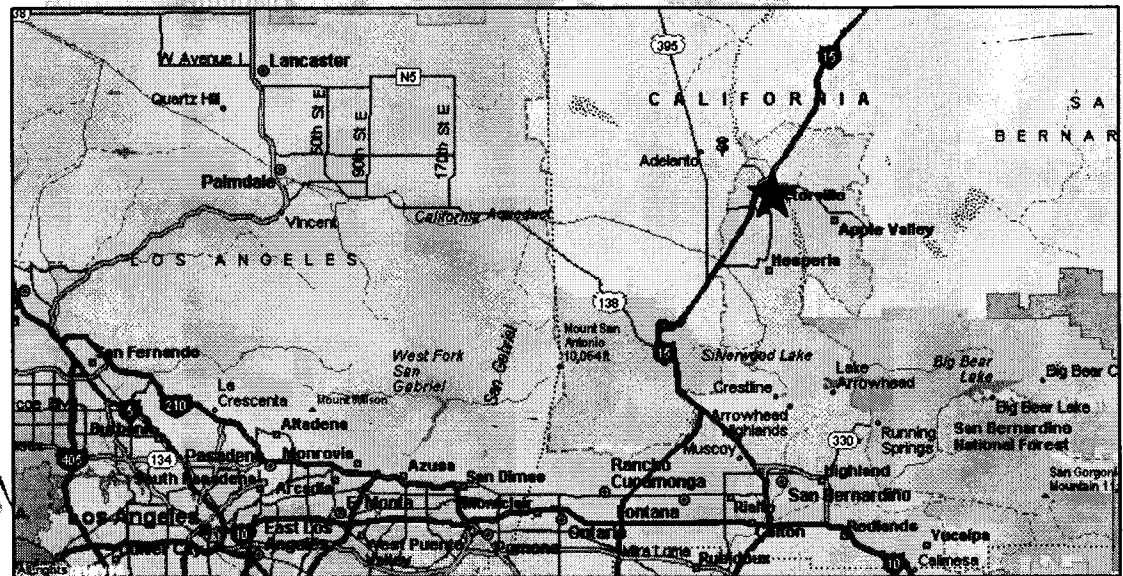
- Inland Valley Development Agency (IVDA) and the San Bernardino International Airport Authority (SBIAA) oversee the redevelopment and reuse of the former Norton Air Force Base.
- The SBIA site is in the eastern portion of the Inland Empire, and is being developed as a logistics park adjacent to existing development.



Southern California Logistics Airport



- The SCLA is the former George Air Force Base, being developed by Stirling International into a 4,000-acre master-planned business and industrial airport complex.
- A SCLA site would favor a future market as a developing logistics park.



Preliminary Analysis of Rail-Truck Tradeoffs

- The sites nearer to Mira Loma (Colton and SBIA) offer a more favorable ratio of truck VMT saved per locomotive mile.
- The SCLA site shows a much lower ratio of VMT saved due to:
 - Longer truck trips between Victorville and Mira Loma
 - Longer rail trips between the Ports and SCLA.
 - Additional locomotive power required to climb Cajon Pass.
- Adding drayage trips between marine terminals and a central departure point for a rail shuttle would reduce the advantages.

Factor	Inland Port Location Example		
	Colton	SBIA	SCLA
Approx. One-way Rail Miles from Port	91	83	113
Approx. RT Rail Miles	182	166	226
Est. Locomotives per train	2	2	3
Est. Locomotive Miles per Train	364	332	678
Est. Rail Switching Miles Per Train	10	10	10
Est. Total Locomotive Miles per Train	374	342	688
VMT Savings Per Truck Trip	91.8	76.2	24.4
VMT Savings: 100-Container Trains	9,180	7,620	2,440
VMT Saved per Locomotive Mile	25	22	4

Model Results

- Model results demonstrate large VMT reductions for the Colton and SBIA locations, and modest reductions for the SCLA location.

Year 2005

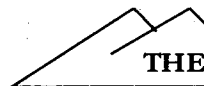
Year 2005	VMT Estimates				Difference			Percent Difference		
	Without Inland Port	Colton	SBIA	SCLA	Colton	SBIA	SCLA	Colton	SBIA	SCLA
AM Peak Hour	126,465	120,302	121,236	125,993	(6,163)	(5,229)	(472)	-4.87%	-4.13%	-0.37%
MD Peak Hour	190,198	180,811	182,178	189,268	(9,387)	(8,020)	(930)	-4.94%	-4.22%	-0.49%
PM Peak Hour	119,825	114,180	115,103	119,434	(5,645)	(4,722)	(391)	-4.71%	-3.94%	-0.33%
AADT*	1,865,333	1,774,756	1,788,534	1,857,671	(90,577)	(76,799)	(7,662)	-4.86%	-4.12%	-0.41%

* AM, MD, and PM Peak Hours are 23.4 percent of daily port trips in 2005

Year 2010

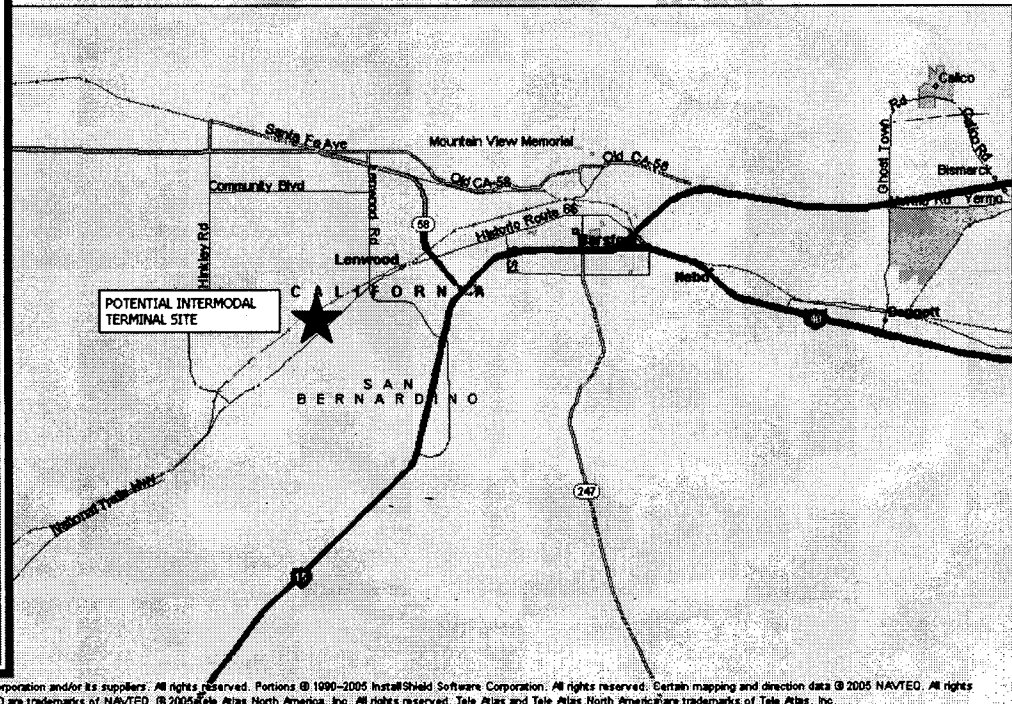
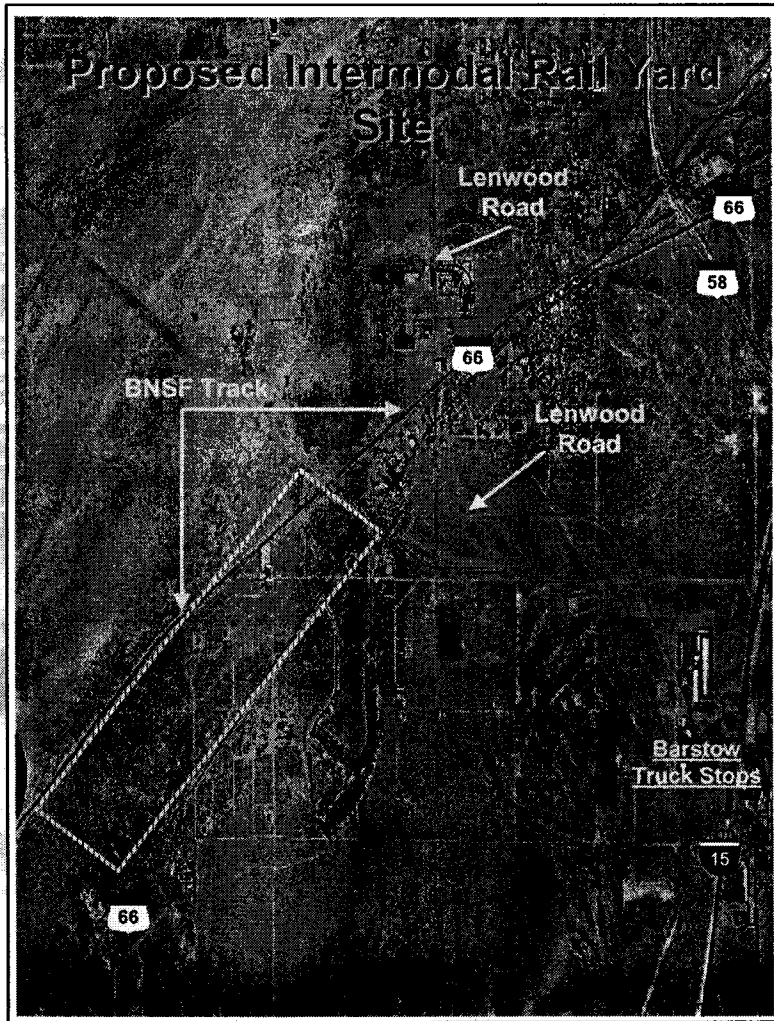
Year 2010	VMT Estimates				Difference			Percent Difference		
	Without Inland Port	Colton	SBIA	SCLA	Colton	SBIA	SCLA	Colton	SBIA	SCLA
AM Peak Hour	162,263	155,130	156,103	161,183	(7,133)	(6,160)	(1,080)	-4.40%	-3.80%	-0.67%
MD Peak Hour	222,142	211,746	213,348	221,154	(10,396)	(8,794)	(988)	-4.68%	-3.96%	-0.44%
PM Peak Hour	134,115	128,039	128,943	133,418	(6,076)	(5,172)	(697)	-4.53%	-3.86%	-0.52%
AADT	2,541,765	2,426,054	2,443,108	2,528,211	(115,711)	(98,657)	(13,554)	-4.55%	-3.88%	-0.53%

* AM, MD, and PM Peak Hours are projected to be 20.4 percent of daily port trips in 2010



Barstow Site

- The potential Barstow site is adjacent to the BNSF mainline with UP trackage rights.
- A Barstow site would be positioned as the center of a developing logistics park and/or an agile port terminal.



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Alternative Inland Empire Sites

- If there are no sites for a new, major, multi-purpose intermodal terminal, are there alternatives?
- Tioga located and analyzed eight sample sites for small, specialized intermodal terminals in the Inland Empire.

Site		Acres	Location	Type of Terminal	Size	Cost
Site 1	Ontario Airport North	35	UP Main Line	Run Through	Medium	Medium
Site 2	Freemont and Jurupa	7	UP South	Parallel Stub	Very Small	Very Low
Site 3	Colton Option 1	25+	UP Main Line	Run Through	Medium	Low
Site 3	Colton Option 2	25+	UP Main Line	Run Through	Large	Very High
Site 4	BNSF Auto Facility 1	45+	BNSF Main Line	Run Through	Large	Medium
Site 4	BNSF Auto Facility 2	45+	BNSF Main Line	Run Through	Large	Very High
Site 5	West Speedway	100+	BNSF North Line	Perpendicular Stub	Large	High
Site 6	Quarry Property	25	BNSF Main Line	Perpendicular Stub	Small	High
Site 7	BNSF Undeveloped	30	BNSF Main Line	Run Through	Medium	High
Site 8	UP Undeveloped	15	UP Spur	Perpendicular Stub	Small	Medium

Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Emissions Reductions

- MMA estimated emissions reduction using urban freeway truck emission factors in 2002 and 2010. The analysis shows significant reductions in port-related truck emissions.

2005 Inland Port Truck Emission Reduction*

2005 Urban Freeway Truck Emissions (kilograms)					
Year	VOC	CO	Nox	PM-10	PM-10 (Exhaust only)
Colton	(38.9)	(224.6)	(2,323.3)	(37.1)	(33.5)
SBIA	(33.0)	(190.5)	(1,969.9)	(31.5)	(28.4)
SCLA	(3.3)	(19.0)	(196.5)	(3.1)	(2.8)

**Used 2002 emission factors*

2010 Inland Port Truck Emission Reduction

2010 Urban Freeway Truck Emissions (kilograms)					
Year	VOC	CO	Nox	PM-10	PM-10 (Exhaust only)
Colton	(32.4)	(131.9)	(969.7)	(19.7)	(15.0)
SBIA	(27.6)	(112.5)	(826.7)	(16.8)	(12.8)
SCLA	(3.8)	(15.5)	(113.6)	(2.3)	(1.8)

Site 2, Freemont/Jurupa

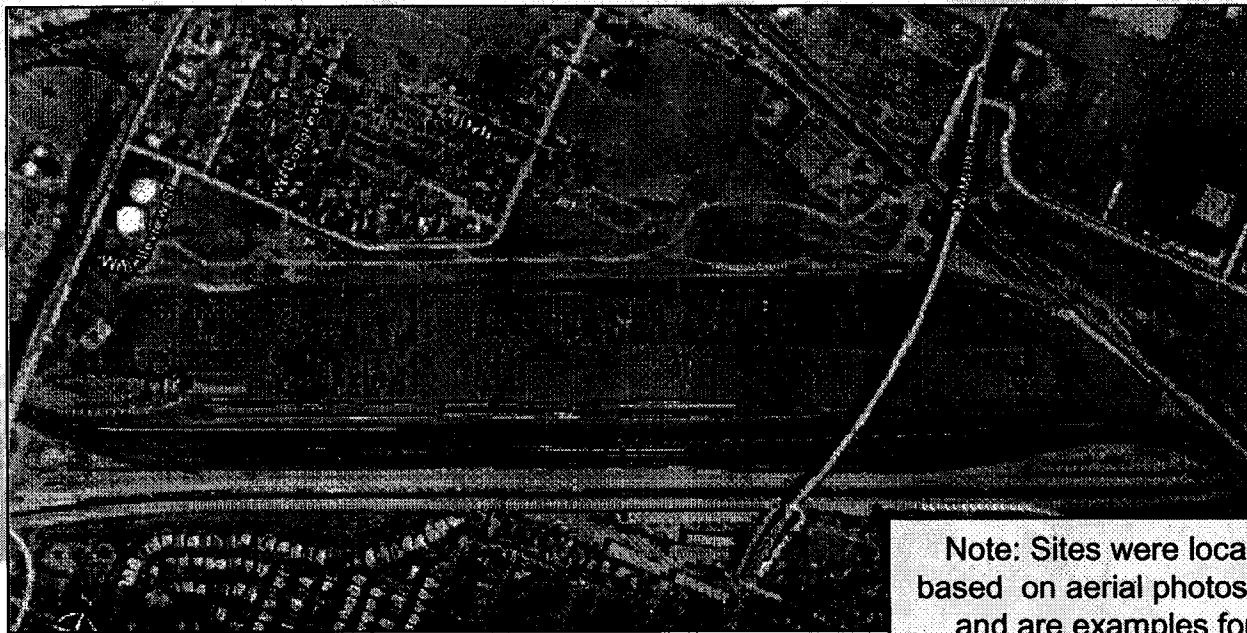
- Loading facility for existing industry on UP. Site may be in use; 5-7 acres may be available.
- This is a very small “start tomorrow facility” receiving local train service. The two tracks are about 1200’ long and there are three longer support tracks. This terminal probably could serve intermodal cars immediately for a rail shuttle.



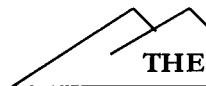
Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Site 4, San Bernardino Auto

- BNSF Auto facility, approximately 45 acres with support yard. Tioga understands that this auto facility is not active at this time. (verify)
- The facility provides the same opportunity as Site 3 with the prospect of a low volume low cost start and the potential to develop a very high intensity terminal.



Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only



Site 5, West Speedway Site

- **100+ acres west of the California Speedway, access via BNSF north line.**
- **This is the largest parcel in the set of options, more than a half mile square. A stub end terminal with nearly 2000' loading and storage tracks could be placed on either side of the industrial lead, perhaps until the site is further developed**



Note: Sites were located and analyzed based on aerial photos from Google Earth and are examples for discussion only

Site 8, UP Undeveloped Land

- Approximately 15 acres of undeveloped land on an UP industrial spur along Live Oak Ave near Mira Loma.
- Undeveloped property is costly to develop into intermodal capacity.
- There are several similar properties along Live Oak which may be available and easier to develop into an intermodal facility. These all would be small stub end facilities with track lengths about 1000'.



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